AMENDMENTS TO CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A transmitting method in CDMA (Code Division Multiple Access) systems with a transmitting apparatus and receiving apparatus, comprising the steps of:
(a) generating a pilot signal and transmitting data signals for several channels with different information; (b) spreading ~~the~~ a complex valued signal composed of a pair of said signals using a complex orthogonal code ~~for each channel~~; (c) adding the complex valued spread signals; (d) scrambling the added complex valued signals signals using complex valued PN (Pseudo-Noise) sequences; (e) modulating the scrambled signals with a carrier; and (f) transmitting a composite signal created by adding the modulated signals.

2. (Currently Amended) A transmitting method as defined in claim 1, wherein complex spreading step and the complex scrambling step ~~perform an orthogonal complex-domain spreading and a complex-domain scrambling, respectively, in order~~ are arranged to improve the PAR (Peak-to-Average power Ratio) characteristic of the transmitter.

3. (Currently Amended) A transmitting method as defined in claim 2, wherein the second complex-domain scrambling codes ($C_{scramble, I} [n] + j\ C_{scramble, Q} [n]$) in the scrambling step are given by the following equations in terms of the primary scrambling codes ($C_1 [n]$, $C_2 [n]$):
(a) when the spreading data vary,

[EQUATION 37]

$$C_{scramble, I} [n] + j\ C_{scramble, Q} [n] = C_1 [n] + C_2 [n]; \text{ and}$$

(b) when the spreading data do not vary,

[EQUATION 38]

$$C_{scramble, I}[n] + j\, C_{scramble, Q}[n] = -C_2[n]\, C_{scramble, Q}[n-1]\, H_b[n-1]\, H_b[n] + j\, C_2[n]\, C_{scramble, I}[n-1]\, H_a[n-1]\, H_a[n].$$

4. (Currently Amended) A transmitting method as defined in claim 2, wherein the orthogonal complex-domain spreading is performed with Hadamard codes and the scrambling codes for the complex-domain scrambling are produced using orthogonal Hadamard codes.

5. (Currently Amended) A transmitting method as defined in claim 2, wherein the orthogonal complex-domain spreading is performed with Walsh codes and the scrambling codes for the complex-domain scrambling are produced using orthogonal Hadamard codes.

6. (Currently Amended) A transmitting method as defined in claim 2, wherein the orthogonal complex-domain spreading is performed with Gold codes and the scrambling codes for the complex-domain scrambling are produced using orthogonal Hadamard codes.

7. (Currently Amended) A receiving method in CDMA (Code Division Multiple Access) systems with a transmitting apparatus and receiving apparatus, comprising the steps of:
(a) demodulating the transmitted signal using the same carrier used in the transmitter; (b) descrambling the demodulated signal using the synchronized identical PN (Pseudo-Noise) sequences of the transmitter; (c) de-spreading the de-scrambled signal using the synchronized identical orthogonal codes of the transmitter for each channel; and (d) recovering the transmitted data from the de-spread signals signal.

8. (Original) A receiving method as defined in claim 7, wherein the de-scrambling step and the de-spreading step perform a complex-domain de-scrambling and an orthogonal complex-domain de-spreading.

9. (Original) A receiving method as defined in claim 8, wherein the complex-domain de-scrambling codes and the orthogonal complex-domain de-spreading codes are the same as those used in the complex-domain scrambling and the orthogonal complex-domain spreading of the transmitter.

10. (Currently Amended) A transmitting apparatus in CDMA (Code Division Multiple Access) ~~system~~ systems with ~~the~~ a transmitting apparatus and receiving apparatus, comprising:
(a) means for generating a pilot signal and transmitting data signals for several channels with different information; (b) means for controlling the signal-gains of the channels (c) means for spreading the gain-controlled signal for each channel; (d) a first complex-domain multiplying means for performing ~~the~~ a first orthogonal complex-domain spreading with the input of the transmitting data of the supplementary channels and of the OVSF (Orthogonal Variable Spreading Factor) codes; (e) means for adding the output of the first complex-domain multiplying means and the spread signal; (f) a spreading modulator, comprising a complex-domain multiplier and a scrambling code generator, for modulating the added signal; (g) means for amplifying ~~the~~ low-pass filtered signal power; (h) means for modulating the amplified signal to the desired frequency band; and (i) means for adding the modulated ~~signals~~ signal.

11. (Currently Amended) A receiving apparatus in CDMA (Code Division Multiple Access) systems with a transmitting apparatus and receiving apparatus, comprising:
(a) means for demodulating the transmitted signal from an antenna using the same carrier used in the transmitter; (b) a spreading de-modulator, comprising a scrambling code generator and complex-domain multiplying means, for de-scrambling the ~~low-pass filtered~~ modulated signal; (c) means for de-spreading the de-scrambled signal to get the desired channel by integrating for the symbol period proportional to the data rate of the corresponding channel; and (d) second complex-domain multiplying means for correcting the phase of the de-spread signal.

4

12. (Currently Amended) A receiving apparatus as defined in claim 11, wherein the carrier used in the demodulating means of ~~step~~ (a) in claim 11 ~~are~~ include the same waves used in the transmitter.